

UK Patent Application GB 2 284 404 A

(43) Date of A Publication 07.06.1995

(21) Application No 9424301.1

(22) Date of Filing 01.12.1994

(30) Priority Data

(31) 9324738

(32) 02.12.1993

(33) GB

(51) INT CL⁶
G09F 3/02

(52) UK CL (Edition N)
B8F FBF FBG

(56) Documents Cited

EP 0463930 A1 US 4284296 A

(58) Field of Search
UK CL (Edition N) B8F FBG
INT CL⁶ A44C 3/00 , G09F 3/00 3/02
ONLINE:WPI

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(54) ID tag systems

(57) An ID tag comprises a ceramic disc bearing, on at least one side surface, coded, machine readable, laser written markings. A production system for such tags is adapted to inter-operate with an existing ID card production apparatus to receive personnel data held in computer memory in a main computer of the latter apparatus, the system comprising means for feeding to a laser writing device a plurality of ceramic ID discs at a predetermined rate; and means controlling said laser writing device so as to laser write onto one side of each ID disc personal details of respective personnel, such as Service Number, Name, Initials and Date of Birth, and to laser write onto the other side of each ID disc a bar code corresponding to the relevant Service Number.

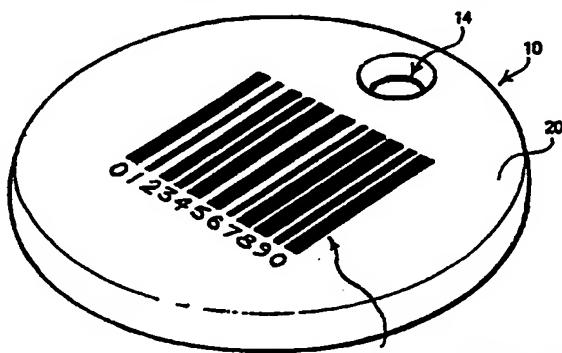


FIG. 2

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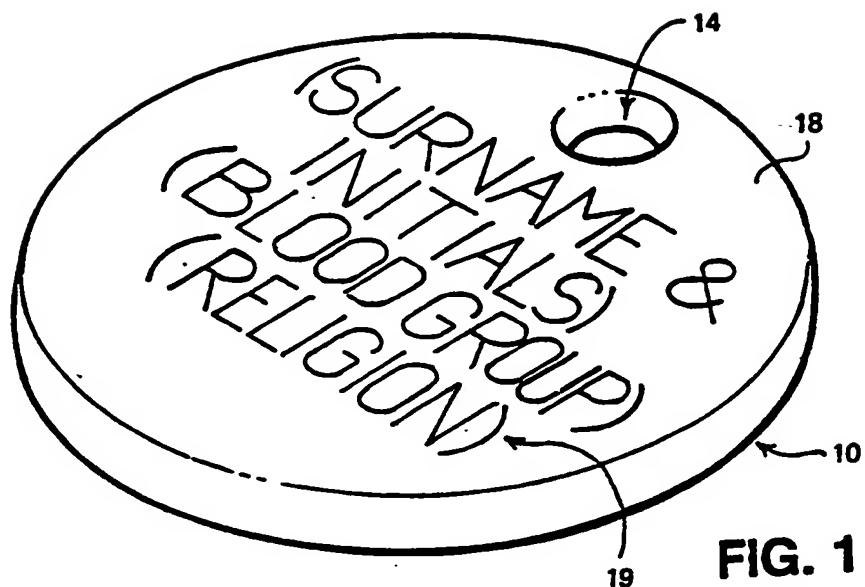


FIG. 1

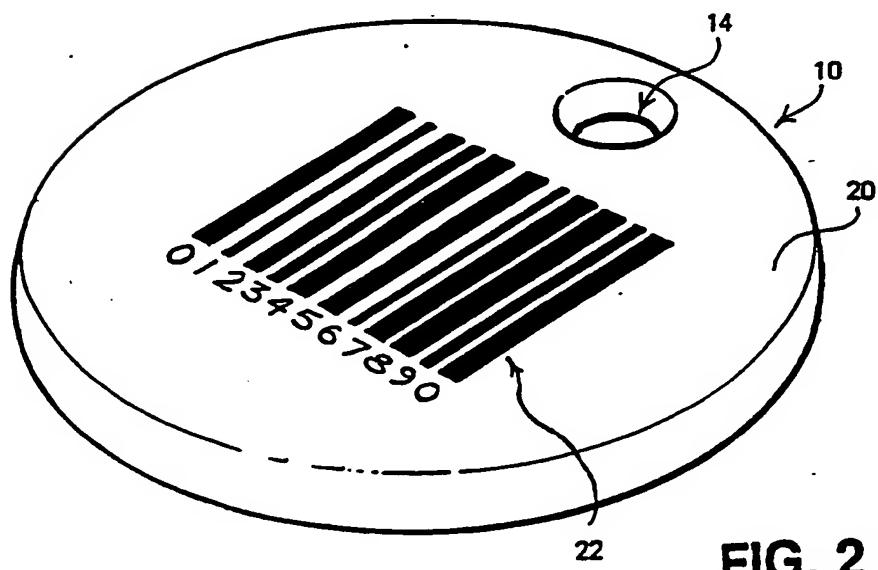


FIG. 2

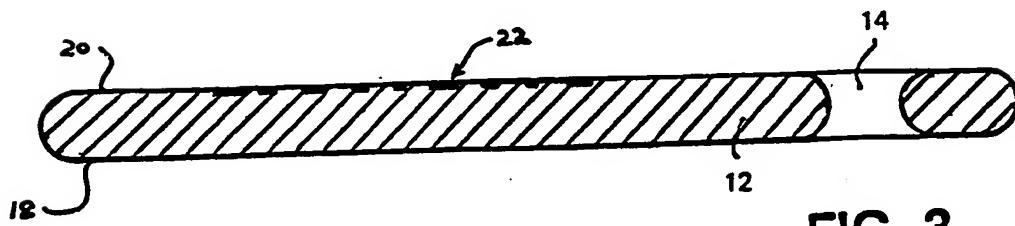


FIG. 3

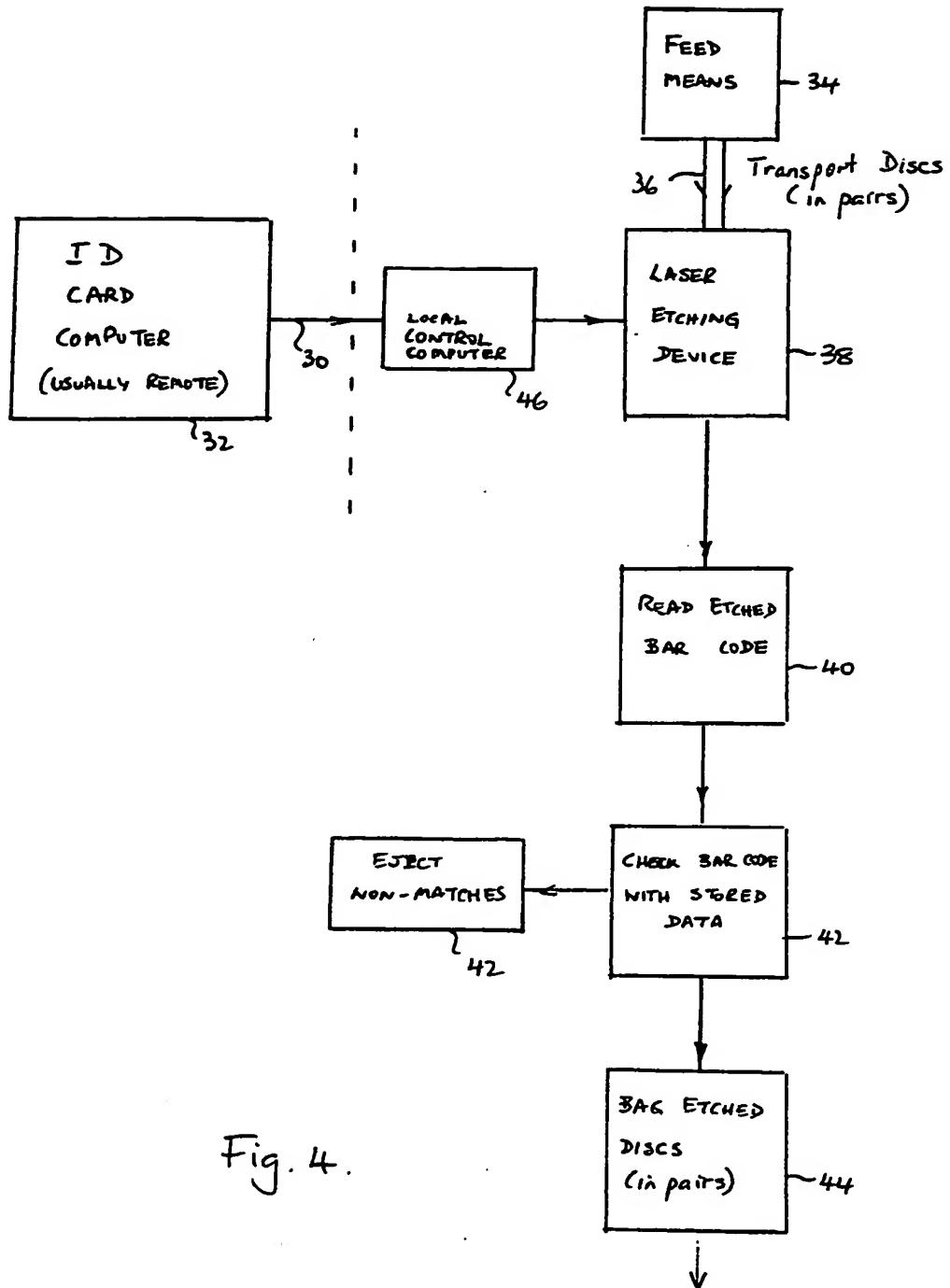


Fig. 4.

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DESCRIPTION

IMPROVEMENTS TO ID SYSTEMS

The present invention is concerned with identification tags of the kind used by personnel in certain occupations and professions, e.g. the army, navy and air force services.

There currently exists equipment for the production of ID cards for use in military personnel and the like. This equipment stores details of the relevant personnel within a computer database. It would be advantageous if a means existed whereby ID tags to be worn by the relevant personnel could be produced automatically using information from that, or other, existing databases.

It occasionally happens that the victims of fires and explosives can be impossible to identify and in particular their conventional metal ID tags can be melted or vaporised. Whereas this situation can arise in many civilian situations, it is particularly problematic in the case of personnel operating in modern warships and military vehicles as a result of the high temperature fires which can be caused by modern explosives.

A requirement therefore also exists for an identification disc (dog tag), particularly but not

exclusively for military personnel, which will withstand high temperatures (of the order of 1500°C) and which, preferably, is capable of being read by computers and/or human beings to achieve modern economies in administration.

In accordance with a first aspect of the present invention, there is provided an ID tag comprising a ceramic disc bearing, on at least one side surface, coded machine readable, laser written markings on that surface.

Preferably, the laser written markings are indented into the surfaces of the discs to achieve indelibility.

Advantageously, the indentations form a bar code for enabling the coded information on the tag to be read by a conventional bar code reader.

In some embodiments, the coded indentations in the form of a bar code are provided on one side only of the disc, the other side of the tag carrying further visually intelligible (human readable) information, such as the Name and Serial Number. The latter information can also be printed, preferably again using a laser printer, so that the indicia are etched into the surface of the disc.

The logistics of issuing such identification tags (discs) are that, for example, uniquely numbered and

bar coded tags can simply be printed with the person's name and then cross-referenced to the number and bar code in a computer system.

A high temperature, steel chain necklace is preferably used to carry the identification tag but with specially weak links to prevent strangulation and to assist removal.

In accordance with a second aspect of the present invention, there is provided an ID disc production system which is adapted to inter-operate with an existing ID card production apparatus to receive personnel data held in computer memory in a main computer of the latter apparatus, the system comprising

(a) means for feeding to a laser writing device a plurality of ceramic ID discs at a predetermined rate; and

(b) means controlling said laser writing device so as to laser write onto one side of each ID disc personal details of respective personnel, such as Service Number, Name, Initials and Date of Birth, and to laser write onto the other side of each ID disc a bar code corresponding to the relevant Service Number.

Preferably the discs are fed two at a time i.e. to form an identical pair from a hopper onto a conveyor belt for laser writing in the order the names

were passed from the main computer.

Preferably the bar code applied to the discs is verified within the system by reading it with a bar code reader and checking against the data written, discs with non-matches or unreadable bar codes being automatically rejected.

The invention is described further hereinafter, by way of example only, with reference to the accompanying drawings, in which:-

Fig. 1 is a front perspective view of one possible embodiment in accordance with the present invention;

Fig. 2 is a rear perspective view of the embodiment of Fig. 1;

Fig. 3 is a sectional side view of the embodiment of Figs. 1 and 2; and

Fig. 4 is a block diagram of one embodiment of an ID disc production system in accordance with the present invention.

The illustrated identification tag 10 comprises a (normally) circular ceramic disc 12 having a hole 14 by which the tag 10 can be attached to a necklace or chain (not shown). The ceramic disc 12 is preferably polished to reduce chafing on the user's skin and to minimise ingress of foreign substances onto the tag surface.

One side 18 of the ceramic tag 10 carries conventional, human-readable information 19, such as the User's Surname and Initials, Blood Group and Religion. This information can be applied in any convenient manner, e.g. it can be printed onto the surface of the ceramic disc 12, preferably etched or indented into the surface of the ceramic disc 12 to prevent damage to or removal of the information.

The other side 20 of the ceramic tag 10 is indented, preferably by laser etching or another etching process, with coded markings 22. In the illustrated embodiment the coded markings 22 are in the form of a conventional bar code. Such indented markings can still be machine read, perhaps after cleaning and/or with the addition of a coloured marking ink, even after the disc has been subjected to a very high temperature environment such as would be experienced in a military vehicle fire.

Such a tag can meet the test criteria demanded of such devices, namely:-

- a. Heat Test: To simulate an aircraft fire the disc should be put in a furnace and subjected to heat at 1500 degrees centigrade for a period of 30 minutes. The bar code and human readable parts of the disc should be readable after cleaning and colouring if required.

b. Ease of cleaning: The disc should be wrapped in wool, cotton and black adhesive tape and burned at 1000 degrees centigrade for 3 minutes. The disc should be cleaned fairly easily and the bar code and human readable parts of the disc should be readable after cleaning.

c. The disc must be able to withstand dropping from a height of 20 feet onto concrete.

d. The disc must be able to withstand a sharp blow in its centre on a substance which will simulate the human body's resistance, e.g. discs being smacked and pressed against the corner of an armoured vehicle whilst suspended from the soldiers body.

e. The disc must be able to withstand body fluids excreted from a dead human body and still be readable, after cleaning if necessary.

f. The disc must be able to withstand day to day wearing round the neck of a human body for long periods of time, enduring sweat and other body fluids and still be readable after, cleaning if necessary.

g. The disc must be able to withstand carrying in pockets along with keys, coins, pens and other objects carried in the wearer's pockets and still be readable, after cleaning if necessary.

h. The disc must not have any sharp edges.

i. The hole in the disc must be smooth with no

sharp edges.

To achieve compatibility with existing practices for production of military ID tags, the new tags will preferably be produced in an apparatus which will inter-operate with an existing military ID Card Production machine. The apparatus shown diagrammatically in Fig. 4 is adapted to carry out the following functions:-

- a. Attach by means of a serial cable 30 or other data link to the existing military ID Card computer 32 and use the data already held on the ID Card system to produce the ID Discs.
- b. Laser etch information such as the Servicemans Number, Name Initials and Date of Birth, Blood Group, Religion and the like on one side of the disc and a bar code of the Servicemans Number on the reverse side of the disc in production line fashion at a prescribed rate, e.g. 2 discs every 30 seconds, under the control of a local computer 46 coupled to said serial cable 30.
- c. Feed discs, preferably in pairs, from a hopper 34 onto a conveyor belt 36 for etching by the laser etching device 38 in the order the names were passed from the main computer.
- d. Verify the bar code by reading it with a bar code reader 40 and testing in a checking device 42

against the data written before the end of the production line. Non-matches or unreadable bar codes are rejected by the system by means of an ejection means 42.

e. A bagging means 44 bags the set of two discs in heat sealed bags at the end of the production line.

f. The complete system is controlled by the local computer 46 linked with the main ID Card Production machine.

g. The machine should be able to be operated in a normal office environment without health and safety problems.

In a typical example, the tag has a diameter of 35mm and is up to 1.5mm thick, with a 3.4mm hold for the chain and the bar code is a 14 digit serial number.

Usually the ceramic material of the tag is alumina or zirconia.

In addition to its high temperature (1500°C) performance, such a ceramic tag is resistant to noxious and corrosive fumes, is indelible and cannot be erased or distorted by smoke damage.

CLAIMS

1. An ID tag comprising a ceramic disc bearing, on at least one side surface, coded, machine readable, laser written markings.
2. An ID tag as claimed in claim 1 in which said laser written markings are indented into said surface or surfaces of the discs to achieve indelibility.
3. An ID tag as claimed in claim 1 or 2 in which the indentations form a bar code for enabling the coded information on the tag to be read by a conventional bar code reader.
4. An ID tag as claimed in claim 3 in which the coded indentations in the form of a bar code are provided on one side only of the disc, the other side of the tag carrying further visually intelligible (human readable) information, such as the Name and Serial Number.
5. An ID tag as claimed in claim 4, in which said further information is also laser printed so that the indicia are etched into the surface of the disc.
6. An ID tag as claimed in any of claims 1 to 5 further including a high temperature, steel chain necklace, having at least one specially weak link to prevent strangulation of the wearer and to assist removal.

7. An ID disc production system which is adapted to inter-operate with an existing ID card production apparatus to receive personnel data held in computer memory in a main computer of the latter apparatus, the system comprising means for feeding to a laser writing device a plurality of ceramic ID discs at a predetermined rate; and means controlling said laser writing device so as to laser write onto one side of each ID disc personal details of respective personnel, such as Service Number, Name, Initials and Date of Birth, and to laser write onto the other side of each ID disc a bar code corresponding to the relevant Service Number.

8. An ID disc production system as claimed in claim 7, in which the discs are arranged to be fed by said feed means two at a time to said laser writing device whereby to form an identical pair of etched discs.

9. An ID disc production system as claimed in claim 7 or 8, including checking means by which the bar code applied to the discs is verified within the system by reading it with a bar code reader and checking against stored data, and further including an ejecting means by which unsatisfactory discs are automatically rejected.

10. An ID tag substantially as hereinbefore

described, with reference to and as illustrated in
Figs. 1 to 3 of the accompanying drawings.

11. An ID disc production system substantially
as hereinbefore described with reference to and as
illustrated in Figs. 4 and 5 of the accompanying
drawings.

Patents Act 1977**Examiner's report to the Comptroller under Section 17 - 12 -**(Search report)**Application number****GB 9424301.1****Relevant Technical Fields**

(i) UK Cl (Ed.N) B8F (FBG)

(ii) Int Cl (Ed.6) A44C 3/00; G09F 3/00, 3/02

Search Examiner
STEPHEN SMITH**Date of completion of Search**
11 JANUARY 1995**Databases (see below)**

(i) UK Patent Office collections of GB, EP, WO and US patent specifications.

(ii) ONLINE: WPI

Documents considered relevant following a search in respect of Claims :-
1 TO 11**Categories of documents**

X:	Document indicating lack of novelty or of inventive step.	P:	Document published on or after the declared priority date but before the filing date of the present application.
Y:	Document indicating lack of inventive step if combined with one or more other documents of the same category.	E:	Patent document published on or after, but with priority date earlier than, the filing date of the present application.
A:	Document indicating technological background and/or state of the art.	&:	Member of the same patent family; corresponding document.

Category	Identity of document and relevant passages		Relevant to claim(s)
Y	EP 0463930 A1	(THOMSON-CSF) see lines 14 to 26 of column 3	1 to 3
Y	US 4284296	(EVANS) see whole document	1 to 3

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